

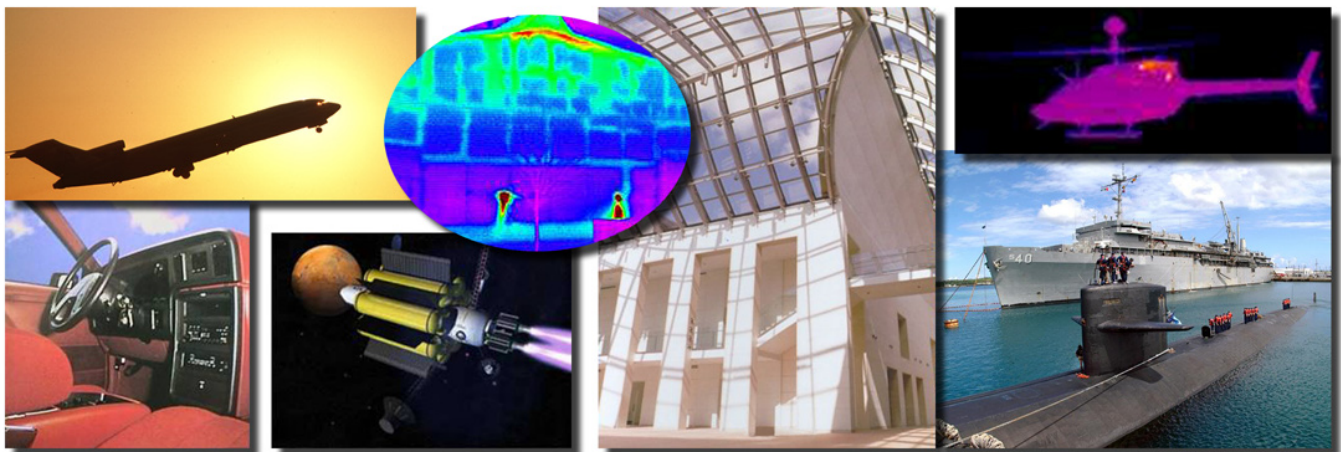
Technology Opportunity

New Inorganic/Organic Materials for Thermal and Acoustic Insulation

The National Aeronautics and Space Administration (NASA) seeks partners for the commercial production and use of a novel polymeric foam composite technology. These foam composites provide improvements in thermal and acoustic insulation, and can be used in rigid and flexible foams of varying densities. Researchers at Kennedy Space Center (KSC) originally developed this technology to improve the performance of polyimide foam. However, they do see additional applications in a variety of polymer foam systems.

NASA has had a growing need for high-performance polymer foams for cryogenic insulation, fireproofing, energy absorption, and other applications. Commercially available foams, however, do not meet all of the requirements for surviving extreme environments. Most low-density foams crack at cryogenic temperatures, and the foams that can withstand extreme temperatures do not have the required structural integrity or thermal performance. Recently chemists at NASA's Kennedy Space Center collaborated with the innovators of the TEEK polyimide at NASA's Langley Research Center to improve thermal performance and maximize the sound attenuation properties of the polyimide foam.

NASA's desire for high-performance foams is necessary to support the development of thermal management materials for lunar habitat structures, as well as components for fluid systems such as cryogenic transfer and storage systems. NASA welcomes the opportunity to leverage this technology into other commercial uses. These materials may prove useful in process piping, tanks for transporting and storing hot or cold fluids, ship and boat building, and aerospace applications.



Potential Commercial Uses

Commercial uses for this technology range from cryogenic to high-temperature applications, and the material can be used in manufacturing the following:

- Aerospace Vehicles
- Commercial Aircraft
- Ships, Boats, and Submarines
- Building Construction Materials
- Food, Medical, and Chemical Storage and Transport Systems

Benefits

- Improved versatility
- Excellent structural and mechanical properties
- Improved thermal performance
- Excellent low and high-temperature performance, with outstanding flame resistance
- Improvements in acoustic attenuation

The Technology

The novelty of the invention comes from combining the polymer foam with a unique inorganic filler in a way that maximizes thermal performance while maintaining mechanical performance, chemical resistance, fire resistance, and the foam's ability to act as an acoustic insulator. The development of new manufacturing processes has brought about these unique composite materials.

Options for Commercialization

This technology opportunity is part of the NASA Technology Transfer Program. The program seeks to stimulate development of commercial applications from NASA-developed technology. The technology was designed, tested, and used at KSC. NASA seeks qualified companies to license and commercialize this technology.

Contact

If your company is interested in the new inorganic/organic materials for thermal and acoustic insulation, or if you desire additional information, please reference Case Numbers KSC-12848, KSC-12894, or KSC-12965 and contact:

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Commercialization Checklist

- ✓ Patent Pending
 - U.S. Patent
 - Copyrighted
- ✓ Available to License
 - Available for no-cost transfer
- ✓ Seeking industry partner for further codevelopment